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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,194	04/19/2004	Wen-Yen Lin	251702-1350	2326

24504 7590 03/28/2006

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EXAMINER	
SANDVIK, BENJAMIN P	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/827,194	LIN, WEN-YEN
	Examiner	Art Unit
	Ben P. Sandvik	2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5, 6, 9-11, 13, 14, 19, 22-24, 26, 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamashita (U.S. PG Pub #2002/0179289).

With respect to **claim 1**, Yamashita teaches a circuit board including a surface (Fig. 7b, 703); a first device disposed on the surface (Fig. 7b, middle device 701); a second device disposed on the surface (Fig. 7b, leftmost device 701), wherein the height of the second device is higher than the height of the first device; and a planarization member, including a flat surface, disposed on the surface a manner such that the first device and the second device is surrounded by the planarization member (Fig. 7b, 704), wherein the height of the flat surface is not less than the height of the second device; and a plate-type heat dissipation device disposed on the flat surface (Fig. 7b, 705).

With respect to **claims 2, 10, and 23**, Yamashita teaches that the planarization member is made of insulating material (Paragraph 30).

With respect to **claim 3, 11, and 24**, Yamashita teaches that the insulating material is a thermosetting polymer (Paragraph 31).

With respect to **claims 5, 13, and 26**, Yamashita teaches that the planarization member further includes a thermal-conductive material (Paragraph 34).

With respect to **claim 6, 14, and 27**, Yamashita teaches that the thermal-conductive material comprises AlN (Paragraph 34).

With respect to **claim 9**, Yamashita teaches providing a circuit board (Fig. 7b, 703) and a plate-type heat dissipation device (Fig. 7b, 705), wherein the circuit board includes a plurality of devices with varying heights thereon (Fig. 7b, 701); placing a planarization member on the circuit board so that the devices are surrounded by the planarization member (Fig. 7b, 704); curing the planarization member so as to form a flat surface (Paragraph 60), wherein the height of the flat surface is not less than the height of the devices; and placing the plate-type heat dissipation device on the flat surface.

With respect to **claim 19**, Yamashita teaches that the planarization member is cured by heating the planarization member (Paragraph 94).

With respect to **claim 22**, Yamashita teaches providing a circuit board (Fig. 7b, 703) and a plate-type heat dissipation device (Fig. 7b, 705), wherein the circuit board includes a plurality of devices with varying heights thereon (Fig. 7b, 701); placing a planarization member on the circuit board so that the devices are surrounded by the planarization member (Fig. 7b, 704); forming a flat surface on

the planarization member, wherein the height of the flat surface is not less than the height of the devices; and placing the plate-type heat dissipation device on the flat surface (Fig. 7b, 705).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 12, 20, 21, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita, in view of Asami et al (U.S. PG Pub #2002/0137867).

With respect to **claims 4, 12, and 25**, Yamashita does not teach that the insulating material comprises one selected from the group consisting of polyimide, silicone and the combination thereof. Asami teaches a thermosetting resin consisting of polyimide (Paragraph 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an insulating material in the device of Yamashita as taught by Asami because polyimide has low relative permittivity.

With respect to **claims 20 and 21**, Yamashita does not teach that the planarization member is cured by infrared light irradiation or by ultraviolet light radiation. Asami teaches a resin that is cured by infrared light or by ultraviolet light (Paragraph 37). It would have been obvious to one of ordinary skill in the art

at the time the invention was made to cure the planarization member of Yamashita using infrared or ultraviolet light as taught by Asami in order to improve the mechanical properties of the resin.

Claims 7, 18, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita, in view of Zuo et al (U.S. PG Pub #2002/0100968).

With respect to **claim 7**, Yamashita does not teach that the plate-type heat dissipation device is plate-type heat pipe, a micro fin, a vapor chamber, or a water-cooling device. Zuo teaches a vapor chamber (Fig. 5, 35 and Paragraph 29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the heat dissipation device as a vapor chamber as taught by Zuo in order to improve the heat dissipation of the device.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita, in view of Gonsalves et al (U.S. Patent #6212074).

With respect to **claim 8**, Yamashita does not teach that the second device is a CPU. Gonsalves teaches that CPU is disposed on a circuit board (Col 1 Ln 20-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the second device of Yamashita a CPU as taught by Gonsalves because it is well known in the art to do so.

Claim 15, 16, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita, in view of Denehy et al (U.S. PG Pub #2002/0041971).

With respect to **claim 15**, Yamashita does not teach that the planarization member is covered by two protective layers, and the protective layers are disposed at opposite sides of the planarization member in a detachable manner. Denehy teaches a thermosetting resin having release films provided on each side of the resin (Fig. 3, 10 and 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide two protective layers on the planarization member of Yamashita as taught by Denehy in order to more easily handle the planarization member.

With respect to **claim 16**, Yamashita teaches a planarization member that is disposed on the circuit board with no protective layers prior to being cured (Fig. 7b, 704). Yamashita does not teach protective layers which are separated from the planarization member before curing. Denehy teaches a thermosetting resin having release films provided on each side of the resin (Fig. 3, 10 and 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the planarization member of Yamashita with protective layers as taught by Denehy and to remove the layers before curing in order to bond the circuit board and heat dissipation device together during the same curing process.

With respect to **claim 28**, Yamashita teaches a planarization member being disposed on a plate-type heat dissipation device (Fig. 8b), but does not

teach a protective layer disposed on the opposite side of the planarization member. Denehy teach a thermosetting resin having release films provided on each side of the resin (Fig. 3, 10 and 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a protective film on the opposite side of the planarization member of Yamashita based on the teachings of Denehy in order to ensure the integrity of the resin before the curing process.

With respect to **claim 29**, Yamashita teaches placing the planarization member on the circuit board before a curing process (Fig. 8c). It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the protective layer of Yamashita and Denehy before the planarization member is disposed on the circuit board in order to adhere the heat dissipation device to the circuit board.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita and Denehy, further in view of Nakamura et al (U.S. Patent #6739040).

With respect to **claim 17**, Yamashita and Denehy do not teach that one of the protective layers is separated from the planarization member before the planarization member is disposed on the circuit board, and another protective layer is separated from the planarization member after the planarization member is cured. Nakamura teaches that a thermosetting resin (Fig. 3b, resin) having a release layer (Fig. 3b, mold release layer) is provided on a substrate and

thermally adhered to the substrate before stripping the release layer from the resin (Fig. 3e). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cure the thermosetting resin of Yamashita and Denehy before removing the protective layer based on the teachings of Nakamura in order to prevent dirt or foreign material to stick to the resin surface (see Col 5 Ln 1-6).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben P. Sandvik whose telephone number is (571) 272-8446. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EVAN PERT
PRIMARY EXAMINER